

in “simple majority”, “weighted majority” requires a majority ( $\text{floor}(n/2)+1$ ) of votes to establish quorum, but the operative item being counted is votes whereas “simple majority” counts nodes.

**[0071]** “Weighted majority” can be configured to emulate other algorithms. For example, by assigning one vote to each node, “weighted majority” emulates a “simple majority” algorithm. By assigning a majority (at least  $\text{floor}(n/2)+1$ ) of votes to one node and 1 (or 0) votes to all other nodes, a “weighted majority” emulates a “master assignment” algorithm. Advantages of “weighted majority” algorithm include its flexibility. A disadvantage of “weighted majority” is that additional “tie-breaking” logic is required to make two-node clusters work correctly.

**[0072]** Some embodiments of the present invention may include one, or more, of the following features, characteristics and/or advantages: (i) creates an audio touchscreen; (ii) creates an ad hoc network out of an array of mobile microphones for spatial triangulation; (iii) performs mobile device audio triangulation; (iv) creates mobile device microphone array touch input; (v) creates a trackpad (also known as a touchpad) based on audio input; (vi) creates a method or system for providing an audio input to a device via triangulation using three or more microphones; (vii) provides audio input to a device (for example, a mobile device, mouse pad, etc.) via sound triangulation using three or more microphones placed in the device; (viii) provides audio input to a device via spatial triangulation using three or more microphones or devices having microphones; (ix) provides an audio input to a device via sound triangulation using three or more devices having microphones; and/or (x) uses an array of microphones to synthesize a touch input on an arbitrary surface.

#### IV. Definitions

**[0073]** Present invention: should not be taken as an absolute indication that the subject matter described by the term “present invention” is covered by either the claims as they are filed, or by the claims that may eventually issue after patent prosecution; while the term “present invention” is used to help the reader to get a general feel for which disclosures herein are believed to potentially be new, this understanding, as indicated by use of the term “present invention,” is tentative and provisional and subject to change over the course of patent prosecution as relevant information is developed and as the claims are potentially amended.

**[0074]** Embodiment: see definition of “present invention” above—similar cautions apply to the term “embodiment.”

**[0075]** and/or: inclusive or; for example, A, B “and/or” C means that at least one of A or B or C is true and applicable.

**[0076]** Including/include/includes: unless otherwise explicitly noted, means “including but not necessarily limited to.”

**[0077]** User/subscriber: includes, but is not necessarily limited to, the following: (i) a single individual human; (ii) an artificial intelligence entity with sufficient intelligence to act as a user or subscriber; and/or (iii) a group of related users or subscribers.

**[0078]** Module/Sub-Module: any set of hardware, firmware and/or software that operatively works to do some kind of function, without regard to whether the module is: (i) in a single local proximity; (ii) distributed over a wide area; (iii) in a single proximity within a larger piece of software

code; (iv) located within a single piece of software code; (v) located in a single storage device, memory or medium; (vi) mechanically connected; (vii) electrically connected; and/or (viii) connected in data communication.

**[0079]** Computer: any device with significant data processing and/or machine readable instruction reading capabilities including, but not limited to: desktop computers, mainframe computers, laptop computers, field-programmable gate array (FPGA) based devices, smart phones, personal digital assistants (PDAs), body-mounted or inserted computers, embedded device style computers, application-specific integrated circuit (ASIC) based devices.

**[0080]** Ceiling(x): the smallest integer not less than x.

**[0081]** Floor(x): the largest integer not greater than x.

**[0082]** Sound: sonic vibrations having a frequency and/or amplitude such that humans can generally hear the vibrations through the sense of hearing.

**[0083]** Sonic: Sound, sub-sonic and/or ultrasonic vibrations.

**[0084]** Sonic event: Any event that produces sonic vibrations; a sonic event that produces “sound” (see definition) is herein referred to as a “sound event.”

**[0085]** Sonic signal: Includes at least information that a sonic event has occurred and the time of the sonic event as measured against a clock.

**[0086]** Timestamp: any data indicating the timing of a sonic event against a computer based clock.

**[0087]** Microphone: any device that transduces the vibrations produced by a sonic event into a data signal (for example, electrical signal, optical signal).

What is claimed is:

1. A method comprising:

receiving, by one or more processors, microphone location data respectively corresponding to locations of a plurality of microphones including at least a first microphone operatively coupled with a first computer device, a second microphone operatively coupled with a second computer device, and a third microphone;

receiving, by the one or more processors, a plurality of sonic signals corresponding to a sonic event respectively transduced by each microphone of the plurality of microphones, where each sonic signal includes time data providing a time of a corresponding sonic event, the receiving the plurality of sonic signals including: receiving a first sonic signal from the first computer device, and

receiving a second sonic signal is received from the second computer device which is different than the first computer device;

triangulating, by the one or more processors, to determine a location of a source of the sonic event based, at least in part, on the plurality of sonic signals and the microphone location data; and

generating, by the one or more processors, a user input data based at least in part on the location of the sonic event as determined by the triangulation.

2. The method of claim 1 wherein the one or more processors is located in and forms an operative part of the first computer device.

3. The method of claim 1 wherein the second sonic signal is received from the second computer device by the one or more processors through a wireless ad hoc network (WANET).